BULLETIN OF MISCELLANEOUS INFORMATION No. 1 1929
ROYAL BOTANIC GARDENS, KEW

I.—THE KENTIA PALM SEED INDUSTRY, LORD HOWE ISLAND. G. P. Darnell-Smith.

During my stay in Sydney, New South Wales, in January, 1928, I was so much interested in the account of the Kentia Palm Industry of Lord Howe Island, given me by Dr. Darnell-Smith, Director of the Botanic Gardens, Sydney, that I asked him to write an account of the industry and of the work of the Board of Control, for the *Kew Bulletin*. The beneficent work of the Board is largely due to the care and thought of Dr. Darnell-Smith himself, and the whole story is a remarkable romance in the realm of Economic Botany. The Islanders are, I understand, all descended from two families.

There are two "*Kentia*" Palms in Lord Howe Island, which are now known under the names *Howea Belmoreana* Becc.—the curly Palm, and *Howea Forsteriana* Becc.—the thatch Palm. O. F. Cook, however, in the Journal of Heredity, xviii, pp. 397-419 (1927), where he gives an interesting account of the Kentia Palms introduced to California, regards *H. Forsteriana* as the type of a new genus *Denea*, so that, according to Cook, the name of the thatch palm should be *Denea Forsteriana* (Becc.) O. F. Cook (*see* Journ. Wash. Acad. Sc. xvi. p. 392, 1926). Cook mentions in his paper that the Kentias have commenced to set fruit in California, so that their introduction to America may, in course of time, seriously affect the Industry in the Island. Two other accounts of Lord Howe Island which refer to the Palms deserve mention, one by the late Mr. J. H. Maiden, "On the Vegetation of Lord Howe Island" (Proc. Linn. Soc. New South Wales, xxiii, pt. 2, p. 137, 1898), and Mr. W. R. B. Oliver's account in the Trans. and Proc. New Zealand Institute, xlix, pp. 94 and 129 (1917). A. W. H.

Lord Howe Island is the home of the beautiful Kentia Palms, from which each year millions of seeds are exported to all parts of the world. The Island, which is of volcanic origin, is crescent-shaped and is about 7 miles in length and from half a mile to one and three-quarters of a mile in width, and contains the small area of about 3,220 acres. It forms part of the State of New South Wales, Australia, and is situated in the Pacific Ocean, 300 miles from the coast.

On the Island there is a small but sturdy population of about 120 souls. The whole of the Island is Crown Land and the Islanders are wholly dependent upon the returns from the seeds of the palms.

Prior to 1912 the Kentia Palm Seed Industry existed on a very indifferent basis. No one really was in control and individual Islanders were exporting in accordance with their own arrangements, with the result that the seed industry developed into a chaotic state, resulting in overlapping, undercutting of prices, etc., with general dissatisfaction to the trade. The principal sufferers were the majority of the Islanders, however, and as the market had not been stabilised, they were really at the mercy of exporters on the mainland. A great measure of dissatisfaction and indeed of poverty resulted, as a consequence of which the Government appointed a Royal Commission to inquire into the control of the Kentia Palm seed trade.

Following the report of the Royal Commission, the Government, in the year 1913, appointed a Board of Control to take charge of the affairs of the Island and the trade thereof. The Board was vested with a Permissive Occupancy over the whole of the lands of the Island. Since that date a new era has developed, and particularly during recent years the Board, by a variation in the policy previously obtaining, has been responsible for the creation of extremely prosperous conditions among the small Island community.

This peculiar and unique Island industry affords a very interesting and successful practical experiment in state socialism, which probably would not be possible in any other part of the world, since the conditions which prevail in the Island are so unusual.

The seed of the Kentia Palm growing on all parts of the Island—on the holdings of the Islanders and otherwise—is regarded solely as the property of the community. On the Island a committee of three members is elected by the Islanders themselves to carry out the instructions of the Board of Control, whose headquarters are on the mainland. The Board in Sydney obtains orders from various parts of the world for the Kentia Palm seed and then arranges, through the local committee on the Island, for each Islander participating in the benefits of the seed industry to collect a certain proportion of the seed required.

As soon as the Palm seed is collected by the Islanders, it is immediately fumigated, then carefully measured and, with suitable packing (banyan soil), placed in three-bushel corn sacks containing two bushels of seed and one of the banyan soil. It is then shipped from the Island to Sydney—a journey of 48 hours—from whence it is exported to growers abroad, after being repacked in cases.

When sales are effected, the proceeds are banked by the Board, and, from such funds, outgoings in the shape of payments for collection of seed, freight, and general charges are met and the balance is held in trust for the Islanders, who receive regular monthly payments and therefore are aware precisely of what their incomes will be.

The distribution of the money to the Islanders is on a very interesting basis. An Islander attaining the age of 21 years is allotted 25 shares in the Seed Industry. This applies to males and

females alike. At the age of 31 another 25 shares are granted which brings the total holding of an adult of 31 years to the maximum of 50 shares. For children, under the age of 16 years, 15 shares per child are allotted, whilst the allotment for children over the age of 16 and under the age of 21 years is 10 shares. There is a proviso, however, that the maximum holding for children is limited to 60 shares. It is thus possible for a man and his wife to hold between them 160 shares, representing 50 shares each in their own right, and 60 towards the support of their children.

Regular monthly payments are made to the Islanders, which aggregate £2 per share per annum, and as the minimum holding is 25 shares and the total maximum holding for a family 160 shares, it will be seen that the Islanders receive from £50 to £320 per annum.

The payments just referred to do not constitute the whole of the income of the Islanders, who obtain payments varying from 6s. to 15s. per bushel for the collection of seed according as to whether it is obtained in accessible or difficult localities, and in addition for work performed for general purposes, *i.e.*, roads, care of their whale boats, etc., payment is made at the rate of 6s. per diem.

When it is remembered that land is made available to the Islanders without charge when they wish to erect dwellings, that they have sufficient areas for cultivation and grazing, that there is an abundant supply of fish, that meat is sold at the fixed price of 3d. per lb., also that Islanders can maintain themselves so far as dairy produce, vegetables, etc., are concerned, and that no rent is payable, it will be realised that they are in a singularly fortunate position.

The seed of the Kentia Palm is usually collected during the months of March, April, May, June and July. As a vessel calls at the Island once every five weeks only, the practice is to gather the seed a few days before the vessel arrives and thus the Islanders are not obliged to undertake continuous work in collecting. Probably the aggregate time involved in gathering the seed is no more than one month per year. Thus, through the benevolence of nature, these fortunate Islanders, with a monopoly of the Kentia Palm seed trade, are assured of a most comfortable existence in one of the most beautiful Islands of the world at a minimum expenditure of their time in earning their income.

Some years ago, through the unfortunate introduction of rats to the Island from a stranded vessel, grave concern was experienced as to the future of the trade, since the rats, which had multiplied in an alarming manner, first practically stripped the Island of bird life and then attacked the palm seeds. The Board was confronted with an alarming situation, but to its credit it brought such regulations into operation as not only stemmed the tide, but resulted in the keeping of the rats in check to such a degree that the seed industry is again in a flourishing condition. The vital period was during the years 1925 and 1926, and the success of the methods adopted cannot be better illustrated than by furnishing the following particulars

as to the number of bushels of seed gathered during the last nine years :—

Year	1919	...	...	*Bushels*	4,494
,,	1920	...	...	,,	3,636
,,	1921	...	...	,,	2,635
,,	1922	...	...	,,	1,664
,,	1923	...	...	,,	1,065
,,	1924	...	...	,,	1,334
,,	1925	...	...	,,	877
,,	1926	...	...	,,	955
,,	1927	...	...	,,	3,037
,,	1928 (to date)	...	...	,,	2,460

The most effective agent in rat destruction has been the barn owl, which has been introduced to the Island, and a bonus is given to the Islanders for every rat killed, the tail being produced as evidence.

On account of the scarcity of seeds during the years 1925 and 1926, some apprehension was caused amongst nurserymen, but their fears are entirely groundless as there is no probability of regular supplies being unavailable. The export of 13,666,500 seeds last year, mainly to England, France, Belgium and America, demonstrates that there is no ground whatever for any anxiety.

No reference to Lord Howe Island is complete without mention being made of its great beauty throughout. The Island is covered with a dense and most luxuriant vegetation, but from the peculiar bouldery character of the formation of the major part of the floor, it has scarcely more than 300 acres suitable for agriculture. The soil of these few acres is extremely rich and almost any sub-tropical vegetation can be grown. There are two mountains on the Island, one rising to a height of 2,840 feet, and the other, which is practically inaccessible, is 2,500 feet high. The climate is peculiarly equable. Frosts are unknown, whilst in summer the thermometer seldom rises above 80 degrees. Rain is abundant, and frequent, and the natural beauties of the Island render it most attractive to visitors.

II.—DECADES KEWENSES PLANTARUM NOVARUM IN HERBARIO HORTI REGII CONSERVATARUM. DECAS CXXII.

1211. **Clematis tortuosa** *Wall.* Cat. 4675 ex *C. E. C. Fischer* [Ranunculaceae] ; ex affinitate *C. Buchananianae* DC. differt indumento fulvo, foliolis acuminatis nec rugosis, paniculis paucifloris diffusis.

Scandens. *Rami* vetustiores fuliginosi, sulcati, pilosi pilis longis fulvis. *Folia* 5-foliolata ; petiolus ad 18 cm. longus, angulatus, fulvo-pilosus vel fulvo-pubescens ; foliola membranacea vel subcoriacea, ovato-lanceolata vel suborbicularia, acuminata, basi rotundata vel sinu in utroque latere petioli bisinuata, 5–13 cm. longa, 2·5–12 cm. lata, marginibus irregulariter grosse dentata vel crenato-dentata, dentibus apiculatis, e basi quinquenervia, supra et infra

parce fulvo-pilosa vel nervis exceptis glabrescentia; petioluli 1·5–10 cm. longi, saepe praehensiles, fulvo-pilosi. *Paniculae* axillares, saepissime folia vix aequantes; rami et pedicelli et bracteae densiuscule fulvo-pilosi vel ochraceo-pilosi; bracteae ovato-lanceolatae, integrae vel grossedentatae, interdum supra glabrae, 1·5 cm. longae; pedicelli 2–4 cm. longi. *Sepala* 4, erecta, apice recurvata, oblonga, obtusa, 1·5–2 cm. longa, extra dense fulvo- vel flavotomentosa, intus glabra vel subglabra. *Stamina* sepalis aequilonga; filamenta albo-sericea; antherae lineares, 5–6 mm. longae, truncatae. *Carpella* pilosa; styli longi, filamentosi, dense albo-sericei. *Achaenia* matura non visa.

India. Silhet, *Wall.* Cat. 4675 (type); Khasia Hills, Gossain Than, *Wall.* Cat. 4676; Khasia Hills & Mishmee, *Griffith* 7, 463; Khasia Hills, Mushai, 1850 m., Sept. 1850, *J. D. Hooker and T. Thomson*; Naga Hills, Kohima, 1200 m., Jan. 1928, *F. Kingdon Ward* 7786, "In deep shade in a thickly forested glen"; Lushai Hills, Vombuk, 1500 m., Jan. 1928, *Mrs. N. E. Parry* 505.

Lushai name: Hruipawnro.

1212. **Mucuna exserta** *C. B. Clarke* MS. ex *C. E. C. Fischer* [Papilionaceae]; *M. bracteatae* DC. proxima, distincta tamen foliolis rigidioribus tenuiter reticulatis, floribus majoribus, fructu dense fusco-setoso.

Planta scandens; ramulis fuscis, angulosis, striatis, superne adpresso-cinereo-puberulis. *Folia* trifoliolata; petiolis teretibus, striatis, basi incrassatis rugosisque, glabrescentibus, 3·5–20 cm. longis, circiter 0·75–2 cm. ultra foliola lateralia productis; stipulis caducis (non visis). *Foliola* rigida; apicale rhomboideum acutum vel acuminatum, basi rotundatum, costa cum paribus 5–6 nervorum principalium supra distinctis infra prominentibus, reticulationibus ultimis tenuibus, marginibus subundulatis, supra glabrum vel subglabrum, infra adpresse cinereo-puberulum, 5–18 cm. longum, 3–11 cm. latum; lateralia ovata latere inferiore plus minusve gibbosa, ceterum terminali similia; petiolulis 4–5 mm. longis; stipellis linearibus, 2–3 mm. longis. *Racemi* terminales; pedunculo cum rhachide usque 24 cm. longo, sulcato, cum pedicellis pilis fuscis setis irritantibus rufis longioribus intermixtis dense vestito; bracteis ovatis vel lanceolatis acuminatis, 1·5–2 cm. longis, utraque pagina fusco-ciliatis atque fusco-pubescentibus, a rhachide caducis sed basi pedunculi imbricatis plus minusve persistentibus. *Flores* 3·5–4·0 cm. longi; pedicellis 5–12 mm. longis. *Calyx* 1 cm. longus, dense fusco-ciliatus, utrinque fusco-pilosus, extraque setas irritantes rufas gerens. *Corolla* saturate purpurea; vexillo ovato-oblongo, obtuso, 2 cm. longo, glabro vel externe marginem versus subhirsuto; alis anguste oblongis, obtusis, marginibus dimidio inferiore dense fusco-ciliatis, 3 cm. longis; carina anguste naviculaeformi apice resima rostrata, marginibus fere apicem usque anguste fusco-ciliata. *Stamina* carinae aequilonga. *Ovarium* dense fusco-pilosum;

stylo gracili pilis fuscis adscendentibus vestito. *Legumen* linearioblongum, turgidum, apice rotundatum, sine plicis vel alis, 5–7 cm. longum, setis nigro-brunneis dense vestitum.

India. Khasia Hills at Mungpo, 1500 ft., October, *C. B. Clarke* 37300A (type), 37253A; *Griffith* (without no.); Garo Hills, 2000 ft., February, *C. B. Clarke* 43057A (type for fruit); Assam, *Griffith* 513 (Kew distribution 1700); Manipur at Neechungad, February, *Meebold* 5338; Lushai Hills at Kaitunkawn, 2000 ft., March, *Mrs. N. E. Parry* 651.

Lushai name: Witeme. "Flowers with an unpleasant smell." (*Parry*).

1213. **Vernonia Parryae** *C. E. C. Fischer* [Compositae]; quam *V. extensa* DC., cui affinis, gracilior; ramulis ramellisque sulcatis; foliis angustioribus neque serratis; inflorescentia e cymis axillaribus paucicapitulatis sistente, capitulis brevius pedunculatis, bracteis involucralibus pilosis, pappo albo.

Suffrutex; ramulis ramellisque gracilibus sulcatis inferne glabris vel fere glabris, ad apices plus minusve adpresse fulvo-pubescentibus. *Folia* alterna elliptica usque linearia saepe falcata, basi in petiolum 3–10 mm. longum angustata, apice tenuiter acuminata vel caudata, 10–22 cm. longa, 1·5–3·0 cm. lata, sursum gradatim angustiora, floralia 3 mm. tantum lata, marginibus remote minute dentata, glaberrima; costa et circ. paribus 7 nervorum principalium et reticulationibus supra distinctis infra prominentibus. *Inflorescentia* e cymis axillaribus 3–5-capitulatis sistens; bracteis linearibus 1–2·5 cm. longis foliis floralibus consimilibus, prope basin fulvo-pubescentibus; pedunculis ramulisque petiolos subaequantibus fulvo-pubescentibus. *Capitula* c. 1·25 cm. diametro, c. 20-flora. *Bracteae involucrales* haud numerosae, extra laxe pilosae, intus glabrae; marginibus scariosis, linea media viridi saltem apicem versus; externae minutae late ovatae apiculatae forma internas sensim appropinquantibus loratas obtusas abrupte minute apiculatas, 7–8 mm. longas. *Receptaculum* glabrum. *Corolla* purpurea, 8–10 mm. longa. *Achaenia* gracilia costata albo-hirsuta 2·5 mm. longa; pappo albo adscendenti-barbellato 7 mm. longo paucis brevissimis interspersis.

India. Lushai Hills at Vombuk, 5000 ft., January, *Mrs. N. E. Parry* 507.

1214. **Senecio lushaiensis** *C. E. C. Fischer* [Compositae]; ab affini *S. acuminato* Wall. foliis latioribus altius serratis semper plus minusve hirsutis, floribus in capitulo numerosioribus ligulis duobus vel tribus perfecte evolutis, bracteis involucralibus numerosioribus atque hirsutis, recedit.

Suffrutex; ramellis striatis pilis brevibus multicellularibus inferne tenuiter (sursum gradatim densius) praeditis. *Folia* exsiccata supra fusco-brunnea infra saturate olivacea, elliptica usque elliptico-lanceolata, 7-10 cm. longa, 2-3 cm. lata, apice acuto

vel acuminato, basi in petiolum crispulo-hirsutum 0·75–1·25 cm. longum angustata, costa cum paribus 5–6 nervorum principalium infra prominente, reticulationibus infra distinctis, nervis venisque utrinque plus minusve breviter fusco-crispulo-hirsutis, marginibus serratis. *Inflorescentia* e corymbis axillaribus paucicapitulis sistens; pedunculis primariis secundariisque cum bracteis phyllariisque extra plus minusve dense pilis brevibus fuscis multicellularibus crispulis vestitis; bracteis inferne foliiformibus, superne minutis linearibus. *Capitula* campanulata, 7 mm. diametro, 7–10-flora quorum duo vel tres ligulatae ceterae tubulares; bracteis involucralibus liberis, 8, 2 vel 3 minutis extra nonnunquam additis, lineari-lanceolatis, subacutis vel obtusis, 4–5 mm. longis; receptaculo fimbriato. *Flores* laete flavi; corolla ligulata 7 mm. longa anguste oblonga, plerumque integra obtusa, quinquenerve, stylis truncatis minute penicillatis; corolla tubulari infundibuliformi, 6 mm. longa, stylis crassioribus quam in floribus ligulatis, antheris breviter caudatis, caudis connatis. *Achaenia* cylindrica sursum leviter ampliata, 2 mm. longa, 5-costata, glabra; pappo albo, adscendenti-barbellato, 5 mm. longo.

INDIA. Lushai Hills at Phongpui, 7000 ft., January, *Mrs. N. E. Parry* 574.

1215. **Lobelia sinaloae** *Sprague* [Campanulaceae-Lobelioideae]; affinis *L. Hartwegii* A.DC., a qua foliis grossius dentato-serratis, racemo brevius pedunculato, floribus majoribus recedit.

Herba 60 cm. alta; caulis juxta basin 6 mm. diametro, 15 cm. supra basin 4 mm. diametro, leviter flexuosus, fusco-purpurascens praesertim inferne, minute patenter pilosulus, inferne sparsius, superne densius. *Folia* patula, sessilia, internodiis 1–3 cm. longis discreta, oblongo-lanceolata vel nonnulla oblanceolata, inferiora ad 9 cm. longa et 3 cm. lata, cetera plerumque 4·5–6·5 cm. longa, 1–1·8 cm. lata, in basin brevius longiusve angustata, apice acuminata acutissima, crebriuscule argute dentato-serrata, supra viridia dense sed inconspicue breviter argute pilosa, subtus albida sparsius pilosa. *Racemi* caulem et ramum lateralem terminantes, internodiis 5–7·5 cm. a folio superiore discreti, 13–15 cm. longi, secundiflori, 13–16-flori; pedicelli 2–3 mm. longi; bracteae arcuato-recurvae, subulato-lanceolatae, inferiores 1·5–1·7 cm. longae, argute serrato-marginatae. *Flores* pedicellis procurvis descendentes. *Calycis tubus* cupularis, 3·5 mm. longus, breviter dense pilosus, valde 10-costatus, costis sepalinis et intersepalinis; lobi subulato-lanceolati, 9–10 mm. longi, laxiuscule serrato-marginati, utrinque densiuscule breviter pilosi. *Corolla* violacea; tubus a basi deflexus, 1·5 cm. longus, 3 mm. diametro mediano, 2 mm. diametro transverso, inconspicue 5-costatus, extra brevissime pilosus, intus inferne pilosus, superne glaber, dorso haud fissus; limbus in tubo oblique insertus, diametro mediano 1·5 cm., diametro transverso paullo minore; lobi utrinque extus magis papillati; lobi anteriores late obovati, apiculati, 6–7 mm. longi, 5–6 mm. lati; lobi posteriores

spathulati, acuminati, 8 mm. longi, 3·3 mm. lati. *Filamenta* supra medium connata (seu potius cohaerentia), posteriora 1·3 cm., anteriora 1·2 cm. longa; tubus extra, et intus superne glaber, intus inferne pilosula; filamentorum partes liberae extra sparse intus densiuscule pilosae; antherae posteriores 3·5 mm., anteriores 2·5 mm. longae, omnes apice pilis candidis penicillatae, ceterum glabrae.

MEXICO. Sinaloa: described from a living plant raised by Mr. T. Hay, Hyde Park, from seed sent by *Mr. W. J. Jessop*, Mina La Tuna, Tarahumar, San José de Gracia, Sinaloa.—Also collected in the Sierra Madre, N. W. Mexico, *Seemann* 2048, and in Sinaloa or Nayarit by *J. Gonzalez Ortega* 1575.

Lobelia Sinaloae is very closely related to *L. Hartwegii* A.DC. Another related species, *L. velutina* Mart. et Gal., was erroneously reduced by Hemsley (Biol. Centr.-Amer. Bot. ii. 267; 1881) to *L. Hartwegii* A.DC., and was subsequently re-described by Wimmer in 1924 as a new species, *L. setulosa*.

1216. **Lisianthus Francisiae** *Sprague* [Gentianaceae-Tachiinae]; affinis *L. axillari* (Hemsl.) Kuntze, foliis multo majoribus pro rata angustioribus in basin angustatis membranaceis recedit.

Planta verisimiliter herbacea, caule patule ramoso fistulari terete viridi exsiccando hyalino-costato, 2·5 mm. diametro 20 cm. infra apicem; internodia 2·5–8·5 (plerumque 3–6) cm. longa. *Folia* subsessilia, vagina brevi communi scariosa connexa, elliptico-lanceolata, longiuscule acute acuminata, in basin subcuneatim angustata, 5–11 cm. longa, 1·8–3·5 cm. lata, membranacea, glabra; nervi laterales primarii utrinque singuli valde obliqui, demum arcuato-ascendentes $\frac{1}{6}$–$\frac{1}{4}$ supra basin folii orti. *Inflorescentia* axillaris, floribus (vel rarius cymulis 2–3-floris) solitariis in axillis; pedunculus 3–7 mm. longus, apice minute bibracteolatus; pedicelli 1·3–1·5 cm. longi, hyalino-costulati. Sepala subulato-lanceolata, 9–10 mm. longa, 1·5–1·75 mm. lata, late hyalino-marginata, valde carinata. *Corolla* anguste infundibuliformis, 4–5 cm. longa; tubus angustus basalis 1·6–1·8 cm. longus; pars inflata 1·5–2 cm. longa; lobi ovato-oblongi acuminati, 9–10 mm. longi, 4 mm. lati. *Stamina* inaequalia, circiter 1·5 cm. supra basin tubi inserta, majora stylum aequantia; antherae oblongae 3 mm. longae, connectivo obtuse apiculato. *Stylus* corollae lobis paullulo superatus, stigmate manifeste bilobo.

BRITISH HONDURAS. Corozal, *Miss E. K. Francis* 1.

The type-specimen of *L. axillaris* (Hemsl.) Kuntze is a small piece of shoot only four inches long, and bearing four pairs of young leaves and six flowers in various stages. It agrees, however, so far as the material goes, with Bernoulli and Cario's no. 1798, from Peten, Guatemala, which is much more complete. Hence the latter specimen has been accepted as representative of *L. axillaris* for purposes of comparison with other species. The differences between it and *L. Francisiae* appear to be mainly, if not entirely, confined to the vegetative part of the plant. In addition to the characters mentioned

in the diagnosis *L. Francisiae* apparently differs in being herbaceous, and freely branched, whereas *L. axillaris* has woody unbranched shoots up to 40 cm. long.

1217. **Eria apertiflora** *Summerhayes* [Orchidaceae-Epidendreae]; affinis *E. convallarioidi* Lindl., a qua foliis latioribus, racemis bene longioribus et laxioribus, floribus majoribus, tepalis patentibus differt.

Epiphytica. Pseudobulbi cylindrico-clavati, pauciarticulati, compressi, ad 16 cm. longi, 2–2·2 cm. diametro, cataphyllis grandescentibus acutis brunneo-maculatis vestiti, apice foliati. *Folia* 3–4, oblongo-lanceolata, acuta, 13–19 cm. longa, 3–5·5 cm. lata, subcoriacea. *Racemi* 2–3, ex axillis cataphyllorum superiorum orientes, horizontali vel nutantes, subdensiflori, multiflori, 10–13 cm. longi, 2–2·5 cm. diametro; rhachis et pedicelli dense puberuli; bracteae inferiores oblongo-ovatae, pallide brunneo-maculatae, valde concavae, superiores oblongo-lanceolatae, flavidae, omnes glabrae, pedicellis satis longiores. *Sepalum* dorsale lanceolato-ovatum, obtusum, 6·5 mm. longum, 3 mm. latum; sepala lateralia subfalcate oblongo-ovata, obtusa, 5·5 mm. longa, 3 mm. lata, mentulum perbreve, rotundatum formantia, basi puberula; omnia sepala alba. *Petala* elliptico-lanceolata, obtusa, 5–5·5 mm. longa, 2–2·5 mm. lata, alba. *Labellum* breviter unguiculatum, trilobum, in toto 4 mm. longum; lobi laterales triangulares, obtusi, albi; lobus intermedius rotundato-deltoideus, apiculatus, flavus, verrucosus. *Columna* crassa, 1·5 mm. longa, alba.

India. Assam: collected by *Mr. G. L. Hinde* and flowered at the Royal Botanic Gardens, Kew, September 1928.

1218. **Polycycnis breviloba** *Summerhayes* [Orchidaceae-Vandeae]; a *P. vittata* Rchb. f. floribus minoribus, labelli lobo intermedio acuminato lobis lateralibus brevissimis rotundatis nec incurvis basi lata sed vix auriculata, ab omnibus aliis speciebus labelli disco calvo differt.

Pseudobulbi ovoidei, valde compressi, 4 cm. longi. *Folia* elliptico-oblonga, acuminata, subchartacea, petiolata, in toto usque ad 22 cm. longa et 6 cm. lata. *Scapus* erectus, circiter 35 cm. altus, teres, cataphyllis vaginatis paucis obsitus; racemus 16 cm. longus. *Flores* erecto-patentes; bracteae lineares vel lineari-lanceolatae, acutissimae, ovario pedicellato duplo vel triplo breviores; pedicelli ut rhachis breviter pubescentes, graciles, 1·5–2 cm. longi. *Sepala* lanceolata, lateralia subobliqua, subacuta, 1·6–1·8 cm. longa. *Petala* linearia, acuta, 1·6–1·8 cm. longa, 1·2 mm. lata. *Labellum* trilobum, basi vix auriculatum; lobi laterales brevissimi, rotundati; lobus intermedius e basi angusta trilobulatus, lobulo intermedio acuminato, lobulis lateralibus patentibus rotundatis, in toto 8–9 mm. longus, lobulis lateralibus inclusis 6 mm. latus; labellum basi carinis tribus instructum, lateralibus prominulis brevibus, intermedia in

labelli lobum intermedium decurrente apice exsurgente et bifida. *Columna* gracillima, 1·4 cm. longa.

Cultivated and flowered by *Messrs. Sander & Sons*, St. Albans, in September, 1928, and believed to be from Brazil. Sepals greenish-yellow, petals yellow and lip white, all with transverse purplish-red bars. Column light green, anther-cap yellow.

1219. **Cymbopogon Parkeri** *Stapf* [Gramineae]; affinis *C. Schoenantho* Spreng., sed foliorum vaginis basalibus basin versus lanuginoso-villosis, laminis arcte plicatis hicinde laxe longe tenuissime pilosis, panicula longiore laxiore, racemorum villis brevioribus ideoque racemis ipsis minus mollibus saepe subsquarrosis, articulo infimo racemi sessilis saepe cum pedicello adjacente tumido alte fuso, spicularum fertilium gluma inferiore magis in dorso excavata, imprimis basin versus ibique lanulosa.

Gramen perenne, compacte, caespitosum, innovationibus intravaginalibus numerosis, ad 1 m. altum. *Culmi* erecti, subgraciles, 3–4-nodi simplicesque infra inflorescentiam, teretes, glabri. *Foliorum* basalium vaginae 5–10 cm. longae, firmae, pallidae, basin versus lanuginoso-villosae, sursum glabrescentes, diu persistentes, tandem ut videtur, haud tortae, culmorum arctae, virescentes, glabrae, laevissimae; ligulae scariosae, rotundato-truncatae, 1·5 mm. longae; laminae plicatae, anguste lineares, sursum longe filiformiter attenuatae, ad 20 cm. longae, explanatae 3 mm. latae, glaucescentes, nervis primariis utrinque 3 prominentibus, secundariis numerosis arcte approximatis, facie inferne laxe pilosae pilis nonnullis hicinde longissimis tenuissimis, et ad nervos scabrae, dorso ubique scaberulae. *Panicula* spatheata, angusta, interrupta, ad 40 cm. longa, 6–7-noda, internodiis inferioribus 10–16 (rare 20) cm. longis, caeteris sursum cito descrescentibus (quarto 3–4·5 cm. longo), subgracilibus glabris; ramus primarius infimus, rarius atque sequens, ad 12 (raro 20) cm. longus, basi plerumque simplex, internodio infimo demum exserto quasi pedunculum paniculae partialis referente; rami sequentes e basi in radios 2–3 filiformes 2–4 cm. longos simplices vel 1–3-nodos glabros vaginis subtendentibus magis minusve inclusos divisi, hisce vaginis laminiferis vel superioribus elaminatis et spathoideis; spatheolae anguste lanceolatae, 3–2·5 cm. longae, scariosae, pallide stramineae, interdum subrubescentes, elaminatae, glabrae; pedunculi circiter 1 cm. longi, glabri, tenuiter filiformes. *Racemi* 2-nati, demum divaricati, uno saltem epinastice deflexo, 1·5 cm. longi, albo-villosuli, unus sessilis, alter basi internodio basali gracili 1·5 mm. longo suffultus; articulus infimus racemi sessilis cum pedicello adjacente saepe tumido duro villosulo alte fusco; articuli fertiles infimi apice in cupulam dentatam ampliati, caeteri lineares, sursum leviter dilatati, apice truncati, in dorso et ad angulos albo-villosi, villis lateralibus ad 2 mm. longis. *Par spicularum* infimum racemi sessilis homogamum, racemi alterius heterogamum. *Spiculae fertiles* lineari-lanceolati, acuminati, 4 mm. longi; callus brevissimus, barbulatus. *Glumae*

subaequilongae ; inferior chartacea, inter carinas scaberulas magis minusve concava et imprimis basin versus depressa et ibi minute villosula, apice bidenticulata ; superior navicularis, a latere anguste lineari-lanceolata, mucronulata, tenuis, 1-nervis, carina scaberula, ad margines hyalinos superne ciliata, caeterum dorso basin versus pilosula. *Anthoecium inferius* ad lemma hyalinum enerve lanceolato-lineare ciliatum 3 mm. longum redactum. *Anthoecium superius* ♀ : lemma angustum, 2 mm. longum, fere ad medium bifidum, hyalinum, lobis ciliatis ; arista gracillima, 9 cm. longa, ad $\frac{1}{3}$ a basi geniculata, torta, columna laevi. *Antherae* 2 mm. longae. *Spiculae* pedicellatae plerumque oblique patentes, lanceolato-lineares, 5·5–6 mm. longae, glabrae, sub anthesi late hiantes, pallide glaucae vel leviter rubro suffusae ; glumae scaberulae, inferior 7–9-nervis inter carinas, superior paulo brevior atque 3-nervis. *Lemma* anthoecii inferioris subulatim involutum, glumis paulo brevius, subenerve, ciliatum. *Antherae* 3 mm. longae.

India. United Provinces, very common in the Ettawah afforestation area, Aug. 1923, *R. S. Pearson.*

1220. **Catalepis** *Stapf et Stent* [Gramineae] ; genus novum e tribu *Chloridearum*, caeterum sedis dubiae, spiculis in ramulos breves dispositis arcte approximatis spicam spuriam secundam constituentibus muticis unifloris, rhachilla continuata, gluma prima minuta fere subuliformi, secunda lemma aequante et ei simili insignis.

Catalepis gracilis *Stent & Stapf.* Species unica.

Gramen perenne, gracile, caespitosum, 25–30 cm. altum, rhizomate brevi tenui, innovationibus intravaginalibus. *Culmi* erecti vel geniculato-ascendentes, 3-nodi, glabri, internodiis inferioribus magis minusve compressis. *Foliorum* basalium vaginae demum apertae et laxiusculae, 2–4 cm. longae, superiorum arctae, omnes glabrae laevesque, superne nervoso-striatae ; ligulae ad pilorum brevium seriem redactae ; laminae anguste lineares, setaceo-convolutae, flexuosae, ad 14 cm. longae, 1 mm. latae, subglaucae, glaberrimae, sursum tenuiter scaberulae. *Panicula* spiciformis, secunda, compressa, densa, ad 3–5 cm. longa, 4 mm. lata, ex albido et griseo-roseo variegata ; rhachis primaria acute angulata, ad angulos scabra, 0·4 mm. lata, internodiis intermediis ad 3 mm. longis, caeteris multo brevioribus ; rhaches secundariae ad 2–5 mm. longae, tenues, spiculas paucas vel ad 9 gerentes. *Spiculae* sessiles, nodulis annulo niveo-scabro circumdatis insidentes, lineari-lanceolatae, acutae, a latere compressae, 4–5 mm. longae, 0·8–1 mm. latae, callo minuto albo-pilosulo, totae deciduae ; rhachilla 0·5–0·6 mm. longa. *Gluma inferior* ad squamulam involutam subuliformem asperulam vix 1 mm. longam redacta, superior membranacea, a latere visa subfalcata, anguste linearis, acuminata, explanata lanceolato-linearis, carinata, ad carinam scabridula, 1-nervis, basi albido-virescens, caeterum purpurascens. *Lemma* glumae superiori simile et aequilongum, sed 3-nerve et paulo latius, intra nervos

laterales sursum evanescentes utrinque fasciculo vel serie pilorum alborum notatum, caeterum glabrum, carina percurrente vel breviter excurrente. *Palea* lemmate paulo brevior, subhyalina, tenuiter 2-nervis, truncata. *Lodiculae* minutae. *Stamina* 3; antherae lineares, 1·5 mm. longae. *Stigmata* anguste plumosa, ut videtur ex apice anthoecii exserta.

TRANSVAAL. Ermelo District; Ermelo Nooitgedracht, sandy veld near vlei, 1700 m., *Potter* (in National Herb. Pret. Henrici 1595).

Catalepis (from κατα and λέπις, in allusion to the scale-like basal glume) is one of those monotypic genera which owing to far-going modifications have lost the characters which otherwise might serve us as links in working out their relationship. Its position in *Chlorideae* can hardly be questioned, but its precise place in the tribe is at present uncertain.

III.—GARDENIA OR WARNERIA. T. A. SPRAGUE.

The generic name *Warneria* (*Varneria*) L.* Amoen. Acad. iv. 136, 138 (1759) was adopted in 1912 by Mr. H. C. Skeels (U.S. Dept. Agric. Bur. Pl. Industry, Bull. 242, 14), in place of *Gardenia* Ellis (1761), and the binominal *Warneria augusta* L.* in place of *Gardenia jasminoides* Ellis. In 1914 Mr. Skeels (U.S. Dept. Agric. Invent. Seeds & Plants Imported, no. 32, 18), proposed the new combination *Warneria Thunbergia* for *Gardenia Thunbergia* L. He contended that "under present rules of botanical nomenclature"—by which, apparently, he meant the "American" Code—*Warneria* was effectively published by the use of the binominal *Warneria augusta* and the citation of a previously published description (*Catsjopiri* Rumph. Herb. Amboin. vii. 26, t. 14, fig. 2). The name *Gardenia* having in consequence been suggested to the writer for conservation, the circumstances attending the publication of *Warneria* have been investigated with the result that the latter name has been found to be *invalid* under International Rules. Hence there is no need to conserve *Gardenia*, as it is the earliest valid name for the genus.

The name *Warneria* appeared in a revised and enlarged edition of Stickman's dissertation on the 'Herbarium Amboinense' (1754), published in Linné's 'Amoenitates Academicae' in 1759. Examination of Stickman's dissertation shows that its object was to give the Linnean, and, in default of these, the pre-Linnean, equivalents of the Rumphian names: "Cum pretiosissimum opus ad oras nostras nondum pervenerat, cum D.D. Praeses *Species* suas *plantarum*

*Skeels attributes *Warneria* and *W. augusta* to Stickman, but Merrill (Interpr. Rumph. Herb. Amboin. 33), points out that at all events the names published in the 1759 reprint of the Herbarium Amboinense must be credited to Linné. He ascribes the new names in the original edition of Stickman's dissertation also to Linné on the following grounds: "the work was done under Linnaeus's inspiration and direction, and the reductions of the Rumphian species must have been made largely, if not wholly, by him."

edidit, factum, ut hujus Synonyma, quae maxime illustrarent plantas indiae rarissimas non potuerint assumi, proinde operam meam non displicituram fore Botanicis crediderim, dum *plantas Rumphii* cum Domini Praesidis Herbario contuli, ut *Synonyma* eruerem et connecterem " (Stickm. Herb. Amboin. 6).

The table of identifications is in three columns, the first giving the number of the plate, the second, the name used by Rumphius, and the third, the corresponding name in the ' Species Plantarum,' or used by some pre-Linnean author. Thus vol. i. tt. 1–3, *Calappa* Rumph., is identified as *Cocos nucifera* [L. Sp. Pl. 1188], and t. 30, *Soccus arboreus major* is identified as *Nanca* Hortus Malabaricus iii. t. 26. The occurrence of the name *Nanca* in the third column does not mean that either Stickman or Linné *accepted* that name : it merely indicates Stickman's belief that *Soccus arboreus major* Rumph. and *Nanca* Rheede are conspecific. The Rumphian species did not receive a valid binary name until 1776, when Thunberg redescribed it as *Rademachia integra* (Vet. Akad. Handl. Stockh. 1776, xxxvii. 254) ; five years later the younger Linné re-named it *Artocarpus integrifolia* (Suppl. 412).

As pointed out by Merrill (Interpr. Rumph. Herb. Amboin. 33), over twenty *new* binominals were published in Stickman's dissertation. These were based on the figures and descriptions given by Rumphius, and are therefore valid under International Rules. In some cases Linné retained part of the Rumphian name : thus he proposed the combinations *Garcinia celebica* for *Mangostana celebica* Rumph., and *Psidium Cujavus* for *Cujavus agrestis* Rumph. *Arbor alba* Rumph., turned into Greek, became the trivial name of *Myrtus Leucadendra*. In other cases the new Linnean names were entirely different from those used by Rumphius. In nine instances† new diagnoses were supplied : these were reproduced in L. Syst. Nat. ed. 10 (1759), that of *Piper decumanum*, however, in an amplified form. The absence of diagnoses in the other cases does not invalidate the names in question, since they are associable with the descriptions given by Rumphius.

The name *Warneria augusta*, however, falls into a different category, as it was *not based on a reference from Rumphius*, but on a specimen in Linné's herbarium, and on drawings and a living plant sent to Linné by some of his correspondents. Linné merely identified *Catsjopiri* Rumph. with his new genus and species, *Warneria* (*Varneria*) *augusta*, which he had already described in manuscript. For reasons given below the name *Warneria* was rejected in favour of *Gardenia* when a description of the genus was eventually published.

†*Rhizophora caseolaris, R. corniculata, Adenanthera falcata, Ricinus Mappa, R. Tanarius, Hernandia ovigera, Convallaria fruticosa, Menispermum flavum, Piper decumanum.* The trivial in these cases is followed immediately by the diagnostic phrase, from which it is separated merely by a comma, so that it is not immediately obvious that the names are binominals. They appear as binominals, however, in the systematic list (' Flora Amboinensis ') which follows.

The early history of the names *Warneria* and *Gardenia* is summarized below. Further details may be found in Ellis's correspondence with Linné (J. E. Smith, A selection of the correspondence of Linnaeus, vol. i. pp. 99-106, 110-114, 120-122, 127-128, 130, 134-136, 139, 146, 158 : 1821).

The shrub known as the " Cape Jasmine " (*Gardenia jasminoides*) was introduced about the year 1754* by Capt. Hutchinson of the Indiaman " Godolphin," who found it growing near the Cape of Good Hope, and on his arrival in England presented it to Richard Warner of Woodford, Essex. As Warner experienced great difficulty in propagating it, he was persuaded by John Ellis, who had been elected a Fellow of the Royal Society in 1754, to give two cuttings to James Gordon, a gardener of Mile End. Gordon was successful in raising a stock of over a hundred plants, and the species seems to have been in cultivation ever since.

Ellis dissected many dried as well as fresh specimens of the " Cape Jasmine," and satisfied himself that it belonged to quite another group from the true jasmines, the fruit being inferior instead of superior as in *Jasminum*. He accordingly wrote to Linné, in July, 1758, sending him a specimen, a description, and a drawing with analyses of the " Cape Jasmine," and asking him to name it in honour of Warner. Ellis also referred to the figure and description of the species published by Miller under *Jasminum*. Linné's manuscript description of *Warneria*, however, was drawn up (in December, 1758, or January, 1759), not from this material, but from a dried specimen from the East Indies which he had discovered in his herbarium. This specimen therefore was the type of the name *Warneria augusta* L., the specimen sent to Linné by Ellis being merely a paratype.

In 1759 Linné brought out a revised edition of Stickman's ' Herbarium Amboinense ' in the ' Amoenitates Academicae ' (iv. 112-143), adding a list of identifications of the thirty plates in the seventh volume (' Auctuarium ') of Rumphius's work, which was not published until 1755, after the appearance of Stickman's dissertation. In this enlarged edition Linné gave the new name, *Warneria* (*Varneria*) *augusta* (Amoen. Acad. iv. 136, 138), as the equivalent of *Catsjopiri* Rumph. (Herb. Amboin. vii. 26, t. 14, fig. 2), and placed it in *Pentandria Monogynia*.

It is clear that *Warneria augusta* L. was not based on *Catsjopiri* Rumph. In the first place, Linné's description of *Warneria* (afterwards published in Gen. Pl. ed. 6, under *Gardenia*) was drawn up *before* the identification of *Catsjopiri* with *Warneria*. Secondly the information contained in the description and figure of *Catsjopiri* was insufficient to classify it according to Linné's system. The flower figured by Rumphius was double, with eighteen petals, and the number of stamens was not mentioned (" stamina quaedam brevia "),

*Miller (Fig. Pl. Gard. Dict. ii. 120 : Aug. 1757) stated that the Cape Jasmine " Continued flowering great part [sic] of the voyage to England, where it arrived in good health and has for three years continued flowering in the curious garden of Richard Warner Esq., at Woodford, in Essex."

so that Linné could not even have placed it in *Pentandria Monogynia* from the details given by Rumphius.

Had Linné published *Warneria* with a description in the tenth edition of his " Systema Naturae,' citing Warner's specimen and the East Indian one in his herbarium, no one would have jumped to the erroneous conclusion that *Warneria* was typified by *Catsjopiri*. The omission of the genus was due partly to Linné's uncertainty regarding the nature of the fruit, and the number of perianth segments, whether five or six ; it was, however, mainly due to the fact that he objected strongly to the suggested *adjectival* generic name *Augusta*, which had been substituted for *Warneria* by Ellis. Eventually (Oct. 1760) Linné agreed to Ellis's further suggestion that the new genus should be called *Gardenia*, but only on condition that Ellis himself published the name.

In the meantime, the " Cape Jasmine " had been described and figured by Philip Miller under the phrase-name *Jasminum foliis lanceolatis oppositis integerrimis calycibus acutioribus* (Fig. Pl. Gard. Dict. ii. 120, t. 180 : 1757 ; Gard. Dict. ed. 7, n. 7 : 1759) and by Ehret as *Jasminum ? ramo unifloro, pleno, petalis coriaceis* (Pl. et Pap. rar. t. 15 : 1759). The first effective publication, however, of a new generic and a binary specific name for the " Cape Jasmine " was by Ellis, as *Gardenia jasminoides* Ellis (Phil. Trans. Roy. Soc. li. 935, t. 23 : 1761). Hence not only the generic name *Warneria*, but also the specific epithet *augusta* fall into synonymy. Ellis explained the change of name as follows : " Mr. Warner, refusing to have it so called *Warneria*, and chusing [sic] that it should still remain a jasmine, as it is commonly called, I have thought no man more worthy, as a botanist, than our friend Dr. Garden ; accordingly the professor [Linné] has agreed to adopt this new genus by the name of *Gardenia* " (l.c. 934). The generic name *Gardenia* was in fact accepted by Linné (Sp. Pl. ed. 2, 305 : Gen. Pl. ed. 6, 116), who, however, substituted the trivial name *florida* for *jasminoides*.

It may be pointed out that, even if the generic name *Warneria* and the binary combination *Warneria augusta* were based on the description and figure of *Catsjopiri* Rumph., they would still be invalid under International Rules, since the flower of *Catsjopiri* was " monstrous," and a name based on a " monstrosity " must be rejected (Art. 51, 3°).

The more important synonymy of *Gardenia* and that of its type-species, *Gardenia jasminoides*, are given below.

Gardenia *Ellis* in Phil. Trans. Roy. Soc. Lond. li. 935, t. 23 (1761) ; Sol. l.c. lii. 654, t. 20 (1762) ; L. Gen. Pl. ed. 6, 116 (1764) ; Phil. Trans. Abridg. xi. 508, 669, t. 15, fig. A-E (1809). *Varneria* L. in Amoen. Acad. iv. 136 (1759), sine descr. *Warneria* L. l.c. 138, sine descr. ; Skeels in U.S. Dept. Agric., Bur. Pl. Industry, Bull. 242, 14 (1912), in obs.

Gardenia jasminoides *Ellis* in Phil. Trans. Roy. Soc. Lond. li. 935, t. 23 (1761); Sol. l.c. lii. 654, t. 20 (1762). *Varneria augusta* L. in Amoen. Acad. iv. 136 (1759), sine descr. *Warneria augusta* L. l.c. 138, sine descr.; Skeels in U.S. Dept. Agric., Bur. Pl. Industry, Bull. 242, 14 (1912). *Gardenia augusta* Merr. Interpr. Rumph. Herb. Amboin. 485 (1917). *Gardenia florida* L. Sp. Pl. ed. 2, 305 (1762), nomen invalidum; Thunb. Diss. Gardenia, 18 (1780); Bot. Reg. t. 449 (1820); Bot. Mag. t. 3349 (1834); Bot. Reg. 1846, t. 43; Franch. et Savat. Enum. Pl. Cap. i. 207 (1875); Forbes et Hemsl. Enum. Fl. China, i. 382 (1888). *Jasminum capense* Mill. Gard. Dict. ed. 8, n. 7 (1768). *Gardenia radicans* Thunb. Diss. Gardenia, 18 (1780); Thunb. Fl. Jap. 109 (1784); Bot. Reg. t. 73 (1815); Andr. Bot. Repos. t. 491. *Catsjopiri* Rumph. Herb. Amboin. vii. 26, t. 14, fig. 2 (1755), status monstrosus. *Jasminum foliis lanceolatis oppositis integerrimis calycibus acutioribus* Mill. Fig. Pl. Gard. Dict. ii. 120, t. 180 (1757); Gard. Dict. ed. 7, n. 7 (1759). *Jasminum? ramo unifloro, pleno, petalis coriaceis* Ehret, Pl. et Pap. rar. t. 15 (1759).

Hab. Native of China and Japan. Widely cultivated in tropical and subtropical countries, and as a conservatory plant in temperate regions.

The attention of botanists is drawn to the case of *Gardenia* and *Warneria* as illustrating a new point in the interpretation of the International Rules of Nomenclature, which may be stated as follows: "*A new name is not validated by the citation of a previous description, unless it is clearly based on that description.*"

IV.—TROPICAL AFRICAN PLANTS: VII.*

J. Hutchinson and J. M. Dalziel.

Papilionaceae (*continued*).

Indigofera Barteri *Hutch. et J. M. Dalz.*, sp. nov.; affinis *I. secundiflorae* Poir., sed ramulorum pilis non glandulosis, foliolis minoribus differt.

Suffrutex; ramuli pilis brevibus strigillosis hirsuti. *Foliola* circiter 10-juga, oblongo-obovata, apice rotundata et mucronata, basi leviter angustata, 6–8 mm. longa, 3–5 mm. lata, supra puberula, infra strigilloso-pubescentia. *Racemi* pauciflori, foliis breviores; flores secundi, coerulei; pedicelli circiter 2 mm. longi. *Calycis lobi* subulati, 1·25 mm. longi. *Fructus* 5–6 mm. longus, strigilloso-tomentosus.

Nigeria: Northern Provinces; Nupe, in crevices of rocks after rains, *Barter* 951 (type), 1604; Jeba, *Barter*.

Indigofera djalonica *A. Chev.* Explor. Bot. Afr. Occid. Franç. 173, nomen; affinis *I. pilosae* Poir., sed foliolis anguste lanceolatis differt.

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*Continued from *K.B.* 1928, p. 404.

Frutex ; rami dense pubescentes. *Foliola* circiter 6-juga, anguste lanceolata, acuta, circiter 2 cm. longa et 0·7 cm. lata, utrinque appresse pilosa ; stipulae lineari-subulatae, 5 mm. longae. *Flores* subumbellato-racemosi, circiter 7 mm. longi ; pedicelli 4–5 mm. longi. *Fructus* linearis, 1·5 cm. longus, glaber.

French Guinea : Futa Jallon, between Dalaba and Diaguissa, 1200–1600 m., Sept., *Chevalier* 18584 (type). Nigeria : Northern Provinces ; Bauchi Plateau, Vom, 1000–1200 m., *Dent Young* 49.

Eriosema bauchiense *Hutch. et J. M. Dalz.*, sp. nov. ; valde affinis *E. shirense* Bak. f. sed foliolis oblongis 2·5–6 cm. longis 1–2·5 cm. latis, stipulis lanceolatis circiter 8 mm. longis longe ciliatis, racemis foliis duplo longioribus pubescentibus, floribus circiter 1 cm. longis fructibus late ellipticis circiter 1·5 cm. longis longe pilosis distincta.

Nigeria: Northern Provinces; Bauchi Plateau, Vom, 1000–1200 m., *Dent Young* 78 (type) ; 81.

Eriosema Chevalieri *Hutch. et J. M. Dalz.*, comb. nov. *Rhynchosia Chevalieri* Harms in Engl. Bot. Jahrb. 40 : 39 (1907) ; Chev. Explor. Bot. Afr. Occid. Franç. 206.

French Sudan : Koundiam, Feb., *Chevalier* 422.

Erythrina Addisoniae *Hutch. et J. M. Dalz.*, sp. nov. ; affinis *E. altissimae* A. Chev., sed calyce plus minusve regulariter 5-lobato lobis lineari-teretibus, fructibus moniliformibus differt.

Arbor circiter 12 m. alta, trunco et ramis aculeis armata. *Foliola* triangulari-ovata, basi latissime cuneata et trinervia, apice sensim et late acuminata, circiter 17 cm. longa et lata, infra molliter pubescentia, nervis lateralibus utrinsecus circiter 8 inter nervos laxe reticulatis. *Calyx* spathaceus, 4 cm. longus, regulariter 5-lobatus, extra molliter tomentosus, lobis linearibus 1·5 cm. longis. *Vexillum* oblongo-ellipticum, circiter 7 cm. longum, minute puberulum. *Fructus* valde moniliformis, glaber, segmentis fere liberis transverse ellipsoideis. *Semina* ellipsoidea, rubra, 1·5 cm. longa, hilo anguste ovato circiter 7 mm. longo.

Sierra Leone : Karene, *Mrs. Addison* (type) ; also in Wando chiefdom and Kamboma, *Mrs. Addison*.

Vigna multinervis *Hutch. et J. M. Dalz.*, sp. nov. ; foliolis anguste linearibus nervis lateralibus numerosissimis a costa sub angulo recto abeuntibus distincta.

Ramuli gracillimi, glabri. *Foliola* anguste linearia, acuta, basi rotundata, subcordata, 6–10 cm. longa, 5–8 mm. lata, nervis lateralibus numerosissimis reticulatis ; stipulae ovato-lanceolatae, basi rotundatae. *Flores* breviter racemosi ; pedunculi usque ad 2·5 cm. longi. *Calyx* 4 mm. longus, breviter triangulari-lobatus. *Fructus* 6 cm. longus, glaber.

Nigeria : Southern Provinces ; Onitsha, *Barter* 1799 (type). Djur-land : Great Seriba Ghattas, *Schweinfurth* 2578. Uganda : Serere, *Maitland* 1286. Angola : Bembe Mt., *Monteiro*.

Vigna racemosa *Hutch. et J. M. Dalz.*, comb. nov. *Clitoria racemosa* G. Don, Gen. Syst. 2 : 215 (1832). *Vigna Donii* Bak. in Oliv. Fl. Trop. Afr. 2 : 202 (1871). *V. nigritia* Hook. f. Fl. Nig. 310 (1849). *V. luteola* Bak. l.c. 205, non Benth., exd. syn. *V. villosa* Savi.

Extends from Gambia through Nigeria and Angola to Rhodesia.

Adenodolichos paniculatus *Hutch. et J. M. Dalz.*, comb. nov. *Dolichos paniculatus* Hua in Bull. Mus. Hist. Nat. Par. 3 : 327 (1897). *D. macrothyrsus* Harms in Engl. Bot. Jahrb. 26 : 320 (1899). *Adenodolichos macrothyrsus* Harms l.c. 33 : 180 (1902).

Extends from French Guinea to the French Cameroons and to the Eastern Sudan.

Zornia Lelyi *Hutch. et J. M. Dalz.*, sp. nov. ; a *Z. diphyllae* Pers. fructibus setis gracilibus puberulis longissimis dense obtectis differt.

Caules e rhizomate lignoso breves, breviter pubescentes. *Folia* 2-foliolata ; foliola anguste lanceolata, acuta, 3–4 cm. longa, circiter 8 mm. lata, breviter pubescentia sed eglandulosa ; stipulae anguste lanceolatae, appendiculatae, circiter 1·3 cm. longae, nervosae. *Bracteae* late ovato-ellipticae, circiter 1 cm. longae, breviter pubescentes. *Flores* non visi. *Fructus* usque ad 3 cm. longus, segmentis setis puberulis circiter 5 mm. longis dense obtectis. *Semina* circiter 5.

Nigeria : Northern Provinces ; Nabardo, 700 m., May, *Lely* 205 (type). Eastern Shari : Ndellé, *Chevalier* 7622.

Ormocarpum guineense *Hutch. et J. M. Dalz.*, comb. nov. *Robinia guineensis* Willd. Enum. Hook. Berol. 769 (1809). *O. sennoides* DC. Prod. 2 : 315 (1825) ; Bak. in Oliv. Fl. Trop. Afr. 2 : 143.

Extends from French Guinea through the Eastern tropics to North Australia.

Desmodium abyssinicum *Hutch. et J. M. Dalz.*, comb. nov. *Anarthrosyne abyssinica* Hochst. ex Baker in Oliv. Fl. Trop. Afr. 2 : 160, in syn. *D. spirale* Bak. l.c., non DC.

Extends from the Cape Verde Islands to Abyssinia.

Droogmansia Chevalieri *Hutch. et J. M. Dalz.*, comb. nov. *Dolichos Chevalieri* Harms in Journ. de Bot. 22 : 114 (1909).

French Guinea : Bilma, Sept., *Chevalier* 19040.

MORACEAE.

Dorstenia obanensis *Hutch. et J. M. Dalz.*, sp. nov. ; foliis obovatis superne repando-dentatis vel lobulatis, receptaculo breviter ramoso distincta.

Caules breviter pubescentes. *Folia* obovata, basi late cuneata, superne repando-dentata, vel lobulata, caudato-acuminata,

12–15 cm. longa, 5–7 cm. lata, glabra, nervis lateralibus utrinsecus circiter 7 utrinque prominulis; petioli circiter 0·5 cm. longi. *Receptacula* supra-axillaria, profunde 6-lobata, usque ad 2·5 cm. expansa, lobis subulato-lanceolatis acutis puberulis.

Nigeria: Southern Provinces; Oban, *Talbot* (Herb. Kew, type); *Talbot* 628, 630.

Dorstenia Smythei var. **deltoidea** *Hutch. et J. M. Dalz.*, var. nov.; a typo foliis apice truncatis et abrupte acuminatis differt.

Ivory Coast: Dyola Country, Danoué, Apr., *Chevalier* 21288 bis.

Dorstenia piscaria *Hutch. et J. M. Dalz.*, sp. nov.; receptaculo breviter lobulato lobo uno elongatissimo valde distincta.

Caules appresse tomentosi. *Folia* late obovata, acute acuminata, basi contracto-cuneata, 15 cm. longa, 6 cm. lata, margine undulata vel lobulata, nervis lateralibus utrinsecus circiter 8; petioli 1·5 cm. longi, hirsuti. *Receptacula* breviter pedunculata, ovato-orbicularia, dentata vel lobulata, circiter 2·5 cm. lata, lobo uno lineare elongato usque ad 7 cm. longo.

Nigeria: Southern Provinces; Oban, *Talbot* (Herb. Kew).

Ficus djalonensis *A. Chev.* Explor. Bot. Afr. Occid. Franç. 604, nomen; affinis *F. Vogelii* Miq., sed receptaculis majoribus tomentellis differt.

Folia elliptica breviter et obtuse acuminata, basi leviter cordata et 5-nervia, circiter 17 cm. longa, 6–10 cm. lata, glabra, nervis lateralibus utrinsecus circiter 8 a costa sub angulo 45° abeuntibus, inter nervos flexuoso-reticulata; petioli circiter 6 cm. longi. Receptacula depresso-globosa, circiter 2 cm. diametro, molliter tomentella, ostiolum bibracteatum.

French Guinea; Futa Jallon, Mamou Circle, near Soya, Jan., *Chevalier* 20372.

URTICACEAE.

Pilea stipulata *Hutch. et J. M. Dalz.*, sp. nov.; affinis *P. ceratomerae* Wedd., sed foliis haud acuminatis basi rotundatis vel subcordatis, stipulis persistentibus suborbicularibus differt.—*P. ceratomera* Rendle in Prain Fl. Trop. Afr. 6, 2: 269, partim, non Wedd.

Herba usque ad 1 m. alta; caules debiles cystolithis crebris notati. *Folia* opposita, leviter anisophylla, late ovata, basi truncata vel subcordata, haud acuminata, usque ad 3 cm. longa et 2·5 cm. lata, crasse dentata, utrinque cystolithis linearibus notata; petioli 1·5–2·5 cm. longi, graciles; stipulae persistentes, suborbiculares, membranaceae, circiter 5 mm. diametro. *Perianthium* glabrum.

Cameroons Mountain: 2500–2600 m., Dec., *Mann* 2011 (type); *Johnston* 66.

HIPPOCRATEACEAE.

Hippocratea vennlosa *Hutch. et M. B. Moss*, sp. nov.; affinis *H. clematoidei* Loes., sed foliis basi rotundatis, floribus minoribus et petalis haud reflexis differt.

Scandens; ramuli glabri, internodiis longis. *Folia* elliptica, basi rotundata, apice abrupte acuminata, 16 cm. longa, 9 cm. lata, crenulata, glabra, chartacea, nervis utrinsecus circiter 10 tertiariis crebre et manifeste reticulatis; petioli 1 cm. longi. *Inflorescentia* laxe paniculata, terminalis et axillaris. *Sepala* parva, pubescentia. *Petala* lanceolata, circiter 1 cm. longa, extra pubescentia, non reflexa.

Sierra Leone: no locality, *Thomas* 10225, 10550 (type).

Hippocratea guineensis *Hutch. et M. B. Moss*, sp. nov.; affinis *H. apocynoidei* Welw., sed ramulis mox glabris, foliis ad nervos et margines glabris, petalis multo brevioribus differt.—*H. apocynoides* Oliv. Fl. Trop. Afr. 1: 368, partim, non Welw.

Frutex scandens 30–40 m. altus; ramuli pubescentes, demum glabri. *Folia* elliptica, utrinque rotundata, basi inaequilatera, usque ad 15 cm. longa et 7 cm. lata, glabra, nervis lateralibus utrinsecus circiter 7 infra prominentibus; petioli vix 8 mm. longi. *Inflorescentia* axillaris et terminalis, laxe cymosa, tomentosa; pedicelli 1 mm. longi. *Flores* parvi, 2 mm. longi, fusci, tomentosi. *Fructus* anguste ellipticus, 5 cm. longus, 2·5 cm. latus, breviter rufo-pubescens.

Common from French Guinea to the Cameroons River and Lagos. —*Chevalier* 14953. *Thomas* 8371. *Johnson* 776. *Dalziel* 204. *Mann* 456, 2218 (type). *Millen* 60.

Hippocratea Chevalieri *Hutch. et M. B. Moss*, sp. nov.; foliis longe acuminatis dentatis marginibus crasse undulatis, floribus breviter cymosis valde distincta.

Frutex, ramulis glabris costatis, brunneo-purpureis. *Folia* elliptica, longe acuminata, basi cuneata, glanduloso-serrata, 8 cm. longa, 3 cm. lata, glabra; petioli vix 1 cm. longi, supra sulcati. *Inflorescentia* axillaris, parva, cymosa; pedicelli quadrangulares; bracteae lineares, glanduloso-dentatae. *Flores* 5 mm. diametro. *Sepala* ciliata. *Fructus* non visus.

Ivory Coast: Mount Kouan, 400 m., Apr., *Chevalier* 21242.

Hippocratea Thomasii *Hutch. et M. B. Moss.*, sp. nov.; affinis *H. Oliverianae* Hutch. et M. B. Moss, sed petalis late ovatis, inflorescentiis tomentosis, pedicellis teretibus differt.

Scandens, ramulis mox glabris. *Folia* elliptica, acute triangulari-acuminata, basi late cuneata, glabra, 5 cm. longa, 2·5 cm. lata, nervis inconspicuis; petioli circiter 5 mm. longi. *Inflorescentia* cymosa, petiolo longior, tomentosa; pedicelli usque ad 2 mm. longi. *Sepala* minuta, glabra. *Petala* late ovata, glabra, 2 mm. longa. *Fructus* non visus.

Liberia: Gbanga, Sept., *Linder* 699; Bonuta, Oct., *Linder* 883. Nigeria: Southern Province; *Thomas* 1663 (type).

Hippocratea Oliveriana *Hutch. et M. B. Moss*, sp. nov.; affinis *H. pallenti* Planch., sed inflorescentiis petiolis longioribus multifloris

satis distincta.—*H. pallens* Oliv. Fl. Trop. Afr. 1 : 367, partim, non Planch.

Frutex scandens, ramulis glabris. *Folia* obovato-elliptica, apice abrupte acuminata, basi cuneata, glabra, 7 cm. longa, 4 cm. lata, nervis lateralibus utrinsecus 4 ; petioli usque ad 1 cm. longi. *Inflorescentia* cymosa, axillaris, uqsue ad 3·5 cm. longa, glabra, bracteis conspicuis ; pedicelli quadrangulares. *Flores* parvi, flavo-virides. *Petala* spathulata. *Fructus* late obovatus, ligneus, 3 cm. longus, glaber.

Sierra Leone : Bagroo River, *Mann* 855 (type) ; Dantilia, Mar., *Scott Elliot* 5270. Liberia : Monrovia, *Whyte*. Gold Coast : E. Akim, June, *Johnson* 760. Togo : Lome, *Warnecke* 157, 302. Nigeria : Southern Province, Oban District, *Talbot* 1447. Gabon : Nyanga, *Le Testu* 1928. Angola : Cazengo ; between Luinha and Palmira, Jan., *Welwitsch* 1336.

Hippocratea Loesneriana *Hutch. et M. B. Moss*, sp. nov. ; affinis *H. Oliverianae* Hutch. et M. B. Moss, sed fructibus multo longioribus quam latis emarginatis, inflorescentiis foliis aequilongis vel longioribus differt.—*H. indica* Oliv. Fl. Trop. Afr. 1 : 368, non Willd.

Frutex 30–40 m. altus, ramulis glabris. *Folia* elliptica vel ovata, utrinque angustata, glabra, inconspicue serrata, 9 cm. longa, 4 cm. lata, nervis lateralibus utrinsecus circiter 5 ; petioli usque ad 1 cm. longi, supra sulcati. *Inflorescentia* laxe cymosa, glabra ; bracteae conspicuae. *Flores* multi et parvi. *Fructus* anguste oblongus, apice emarginatus, ligneus, 5 cm. longus, 1 cm. latus.

French Guinea : Futa Jallon, Apr., *Caille in Herb. Chevalier* 18145 ; *Chevalier* 18618. Sierra Leone : various localities, *Thomas* 3702 ; *Scott Elliot* 4456 ; *Lane-Poole* 48 (type). Liberia : Gbanga, Sept., *Linder* 490, 808 ; Du River, Aug., *Linder* 283. Ivory Coast : Mt. Kouan, *Chevalier* 21243. Gold Coast : *Irvine* 385. Nigeria : Northern Province, Nupe, *Barter* ; Southern Province, Lagos, Jan., *Millen* 110. Fernando Po, *Mann* 185. Angola : various localities, *Welwitsch* 1324, 1333, 1334, 1337, 1338.

Salacia euryoides *Hutch. et M. B. Moss*, sp. nov. ; affinis *S. macrocarpae* Welw., sed pedicellis brevioribus, alabastris longioribus et angustioribus, foliis brevissime acuminatis differt.—*S. macrocarpa* var. *grandiflora* Loes.

Frutex, ramulis sulcatis glabris. *Folia* late elliptica, apice breviter acuminata, basi breviter cuneata, glabra, circiter 12 cm. longa, 4–6 cm. lata, crenata, nervis lateralibus utrinsecus 8, tertiariis manifeste reticulatis ; petioli usque ad 1 cm. longi, glabri. *Inflorescentia* fasciculata, axillaris, multiflora ; pedicelli usque ad 1·5 cm. longi. *Alabastra* elongata, dimidio longiora quam lata. *Sepala* late ovata, fimbriata, mox glabra. *Petala* obovata, 5 mm. longa, flava. *Fructus* non visus.

Sierra Leone : Talla Hills, Feb., *Scott Elliot* 4870 (type) ; Berria, Mar., *Scott Elliot* 5433.

Salacia Dalzielii *Hutch. et M. B. Moss*, sp. nov. ; affinis *S. macrocarpae* Welw., sed foliis obovato-oblongis utrinque angustatis undulatis pedicellis brevioribus differt.

Frutex scandens, ramulis annotinis scabridis hornotinis glabris. *Folia* obovato-oblonga, utrinque angustata, undulata et crenata, circiter 8 cm. longa, 3·5 cm. lata, nervis lateralibus utrinsecus 9, tertiariis reticulatis ; petioli 6 mm. longi. *Inflorescentia* axillaris, fasciculata, multiflora ; pedicelli circiter 1 cm. longi. *Alabastra* elongata, dimidio longiora quam lata. *Sepala* late ovata, fimbriata. *Petala* lanceolata, 4 mm. longa.

Nigeria : Northern Province, Lokoja, Feb., *Dalziel* 92 (type) ; Southern Province, Ezi, Feb., *Thomas* 2328, 2358.

Salacia leonensis *Hutch. et M. B. Moss*, sp. nov., affinis *S. bipindensi* Loes., sed foliis symmetrico-acuminatis basi sub-cordatis, petiolis brevioribus differt.

Frutex, ramulis quadrangularibus crebre verrucosis. *Folia* leviter obovato-elliptica, apice acuminata, basi subcordata, glabra, parce crenata, usque ad 15 cm. longa, 5 cm. lata, nervis lateralibus utrinsecus 4, costa media supra prominente ; petioli usque ad 5 mm. longi, supra sulcati, rugosi. *Inflorescentia* pedunculata, glomerata ; pedunculus vix 1 cm. longus ; pedicelli circiter 6 mm. longi. *Flores* 6 mm. diametro. *Fructus* ovoideus, longe acuminatus, 4–6 cm. longus, 2·5 cm. latus, manifeste verrucosus et rugosus.

Sierra Leone : various localities, *Unwin & Smythe* 16 ; *Aylmer* 82 ; *Thomas* 7650 b, 7944 (type), 9360. Liberia : Peahtah, *Linder* 906.

Salacia Caillei *Hutch. et M. B. Moss*, sp. nov. ; affinis *S. nitidae* N.E. Br., sed foliis minoribus abrupte acuminatis, pedunculo commune longiore differt.

Frutex ramulis teretibus glabris. *Folia* elliptica vel leviter obovata, abruptissime acuminata, apice rotundata, basi gradatim cuneata, glabra, 6·5–9 cm. longa, 2·5–4 cm. lata, nervis lateralibus utrinsecus 8 inconspicuis ; petioli 5 mm. longi, rugosi. *Inflorescentia* pedunculata, glomerata, pedunculus communis usque ad 8 mm. longus ; pedicelli breves. *Flores* parvi. *Fructus* late obovoideus, basi valde abrupte angustatus, 2 cm. longus, 1·5 cm. latus.

French Guinea : Kouria, Sept., *Chevalier* 14902. Sierra Leone ; various localities, July, *Thomas* 1071 ; Oct., *Thomas* 3450 (type), 3730, 9016. Liberia : Banga, *Linder* 1241. Gold Coast : Klobo, July, *Johnson* 1107.

Salacia Howesii *Hutch. et M. B. Moss*, sp. nov. ; affinis *S. nitidae* N.E. Br., sed cymis fasciculatis, foliis oblanceolato-obovatis subabrupte et obtuse acuminatis, sepalis petalisque puberulis differt.

Frutex parvus, ramulis lignosis. *Folia* oblanceolato-obovata, subabrupte et obtuse acuminata, basi gradatim cuneata, circiter

15 cm. longa, 5–6 cm. lata, apicem versus minute denticulata, nervis lateralibus utrinsecus circiter 7 ; petioli usque ad 6 mm. longi, glabri, rugosi. *Inflorescentia* axillaris, cymosa, pedunculata, fasciculata ; pedunculi et petioli puberuli. *Flores* virides, 4 mm. diametro. *Sepala* et petala extra puberula.

Gold Coast : Anaje, 7 miles north-west of Sekondi, Oct., *Howes* 974.

ICACINACEAE.

Pyrenacantha Staudtii *Hutch. et J. M. Dalz.*, comb. nov. *Chlamydocarya Staudtii* Engl. Bot. Jahrb. 24 : 486 t. 8 A-D (1897).

Extends from Southern Nigeria to the Belgian Congo.

Chlamydocarya macrocarpa *A. Chev.* Explor. Bot. Afr. Occid. Franç. 128, nomen ; species fructibus corollis persistentibus elongatis 4 cm. longis coronatis valde distincta.

Folia elliptica, late acuminata et mucronata, basi anguste rotundata, circiter 16 cm. longa et 7 cm. lata, integra, infra laxe reticulata, nervis lateralibus utrinsecus 8–10 marginem versus multe ramosis ; petioli 2·5 cm. longi, glabri. *Flores* non visi. *Fructus* turbinatus, 2·5 cm. longus, superne villosus, corolla persistente elongata 4 cm. longa extra setosa coronatus.

Ivory Coast : Dabou, *Chevalier* 17216.

Iodes Talbotii *Bak. f. ex Hutch. et J. M. Dalz.*, sp. nov. ; ramulis pilis debilibus hirsutis foliis basi cordatis valde distincta.

Scandens ; ramuli longe pilosi et breviter tomentelli. *Folia* ovata, breviter acuminata, basi cordata, 5–9 cm. longa, 3–5 cm. lata, infra pilosa, nervis lateralibus utrinsecus 6 ; petioli vix 1 cm. longi ; cirrhi extra-axillares, usque ad 15 cm. longi. *Cymae* axillares, breves, pauciflorae, ubique piloso-tomentosae. *Ovarium* dense tomentosum. *Fructus* late ellipsoideus, 1·3 cm. longus, crasse reticulatus et tomentellus.

Nigeria : Southern Provinces ; Oban, *Talbot* 572.

Raphiostylis cordifolia *Hutch. et J. M. Dalz.*, sp. nov. ; foliis ovato-ellipticis longe acuminatis basi cordatis valde distincta.

Frutex scandens ; ramuli dense pilosi. *Folia* ovato-elliptica, basi cordata, apice longe et obtuse acuminata, 9–12 cm. longa, 5–6 cm. lata, infra nervis praesertim pilosa, nervis lateralibus utrinsecus 3–4 arcuatis ; petioli 3–4 mm. longi, villosi. *Flores* axillares, glomerati, sessiles. *Sepala* apicem versus setulosa. *Petala* linearilanceolata, 8 mm. longa, apice leviter setuloso excepto glabra. *Ovarium* villosum.

Liberia : Banga, Oct., *Linder* 1218.

OPILIACEAE.

Urobotrya Stapfiana *Hutch. et J. M. Dalz.*, sp. nov. ; affinis *U. angustifoliae* Stapf, sed foliis ellipticis vel ovato-ellipticis latioribus differt.

Ramuli glabri : *Folia* oblongo-elliptica, acuta, acuminata, basi rotundata, circiter 14 cm. longa et 5 cm. lata, glabra, nervis lateralibus utrinsecus 6 infra prominulis ; petioli usque ad 1 cm. longi. *Racemi* 15 cm. longi, penduli, glabri ; pedicelli 1·3 cm. longi, graciles. *Sepala* 3 mm. longa. *Stamina* longe exserta.

Sierra Leone : Bafi River, Feb., *Macdonald* 6. Liberia : Kakatown, *Whyte* (type) ; St. Paul's River, *Reynolds*.

Octoknemataceae.

Octoknema borealis *Hutch. et J. M. Dalz.*, sp. nov. *O. affinis* A. Chev. Explor. Bot. Afr. Occid. Franç. 125, non Pierre.

Frutex ; ramuli stellato-puberuli. *Folia* oblongo-obovata, acuminata, basi breviter cuneata, 15–25 cm. longa, 5–8 cm. lata, infra costa et costam versus stellato-puberula, nervis lateralibus utrinsecus 6–7 intra marginem evanidis ; petioli stellato-tomentelli, 2·5–3 cm. longi, apicem versus incrassati. *Racemi* axillares vel leviter supra-axillares, circiter 5–6 cm. longi, pilis brevibus stellatis ubique induti ; pedicelli 1–2 mm. longi. *Alabastra* globosa minima. *Fructus* inferior, subglobosus, circiter 1 cm. longus, calycis lobis persistentibus latis coronatus.

French Guinea : Kouria, *Chevalier* 18183. Kissidougou, Feb., *Chevalier* 20707. Sierra Leone : North Kundita, Mar., *Scott Elliot* 5042 (type). Ivory Coast : Alépé, Mar., *Chevalier* 16246 ; Upper Cavally, near Ona, Apr., *Chevalier* 21318, 21321.

Rutaceae.

Fagara Unwinii *Hutch. et J. M. Dalz.*, sp. nov. ; foliolis oblongo-lanceolatis breviter acuminatis, fructibus globosis rugosis distincta.

Rami leviter aculeati, glabri. *Folia* usque ad 18 cm. longa. *Foliola* oblongo-lanceolata, breviter acuminata, basi inaequaliter cuneata, 6–7 cm. longa, circiter 2 cm. lata, nervis lateralibus numerosis patulis. *Flores* non visi. *Infructescentia* paniculata, circiter 12 cm. longa. *Fructus* globosus, rugosus, circiter 5 mm. diametro. *Semina* nigra, nitida, globosa.

Nigeria : Southern Provinces ; Boji Hills, 1500 m., *Unwin* 13.

Fagara attiensis *Hutch. et J. M. Dalz.*, sp. nov. ; foliolis plus minusve oblongo-ellipticis subcaudato-acuminatis parce glanduloso-punctatis, fructibus laevibus distincta.

Frutex vel arbor parva ; ramuli verruculosi, aculeati. *Foliola* multijuga, opposita, oblongo-elliptica, subcaudato-acuminata, basi breviter cuneata, 8–12 cm. longa, 2·5–6 cm. lata, parce glanduloso-punctata, crenulata, nervis lateralibus utrinsecus circiter 10 arcuatis intermediis plus minusve reticulatis. *Paniculae* usque ad 15 cm. longae, glabrae ; pedicelli 1·5 mm. longi. *Sepala* oblonga, 2·5 mm. longa. *Fructus* oblique globosus, circiter 7 mm. diametro, glaber.

Sierra Leone : without locality, *Scott Elliot* 5745. Ivory Coast : Alépé, *Chevalier* 17423 (type) ; Morenou, *Chevalier* 22471. Gold Coast : Okroase, May, *Johnson* 750. Nigeria : Southern Provinces ; without locality, *Thomas* 1797.

Burseraceae.

Commiphora Dalzielii *Hutch.*, sp. nov. ; valde affinis *C. africanae* Engl., sed foliolis infra glabris obscure crenatis obovato-rhomboideis 2·5–4 cm. longis 1·5–3 cm. latis tenuissimis, petiolo foliolis longiore, ramulis saepe spinescentibus (floribus non visis), fructibus carnosis ellipsoideo-globosis 1 cm. longis differt.

Gold Coast : Winnebah Plain, fr. Feb., Dalziel 8296.

Meliaceae.

Guarea leonensis *Hutch. et J. M. Dalz.*, sp. nov. ; affinis *G. glomerulatae* Harms, sed petalis margine excepto glabris, foliolis circiter 3-jugis differt.

Arbor vel frutex ; ramuli purpurascentes, glabri. *Foliola* circiter 3-juga, elliptica, longe acuminata, basi breviter cuneata, 7–10 cm. longa, circiter 3·5 cm. lata, nervis lateralibus obscuris circiter 5-jugis. *Flores* laxissime paniculati ; paniculae foliis breviores, puberulae, pedicelli 2–3 mm. longi. *Calyx* cupularis, 2 mm. longus, undulate dentatus, extra glaber. *Petala* linearioblonga, 0·8 cm. longa, margine puberula. *Ovarium* glabrum. *Fructus* non visus.

Sierra Leone : Gola Forest, Jan., *Unwin & Smythe* 39 ; Koteimahun, *Lane-Poole* 337 (type).

Turraeanthus Vignei *Hutch. et J. M. Dalz.*, sp. nov. ; affinis *T. Zenkeri* Harms, sed foliolis longe acuminatis latioribus differt.

Arbor ; ramuli puberuli. *Foliola* numerosa, alterna, elongato-oblonga vel subelliptica, longe acuminata, basi rotundata vel breviter cuneata, 15–25 cm. longa, 5–8 cm. lata, tenuiter chartacea, infra glabra, nervis lateralibus utrinsecus circiter 20 a costa subangulo fere recto abeuntibus. *Paniculae* breves, tomentellae. *Flores* flavi, angusti, cylindrici, circiter 2 cm. longi. *Calyx* cupularis, truncatus vel undulatus. *Corolla* 1·5 cm. longa, extra tomentosa. *Columna* staminalis breviter exserta.

Gold Coast : Nfoum, Cape Coast district, Apr.-June, *Vigne* 948.

Sapindaceae.

Allophylus megaphylla *Hutch. et J. M. Dalz.*, sp. nov. ; foliola magna circiter 45 cm. longa et 15 cm. lata valde distincta.

Ramuli appresse pubescentes. *Foliola* magna, obovata, basi cuneata, longe acuminata, usque ad 45 cm. longa et 15 cm. lata, denticulata, infra fere glabra, nervis lateralibus utrinsecus circiter 12 inter nervos laxe reticulata ; petioli pubescentes. *Paniculae*

angustae, ramulis brevissimis, ubique parce pubescentes ; pedicelli 3 mm. longi. *Alabastra* late ovoidea, minute puberula.

Nigeria : Southern Provinces ; Oban, *Talbot* 414, 1393 (type).

Laccodiscus cauliflorus *Hutch. et J. M. Dalz.*, sp. nov. ; affinis *L. ferrugineo* Radlk., sed foliolis integris basi rotundatis infra setoso-pubescentibus differt.

Arbor parva ; ramuli graciles, hirsuti. *Foliola* opposita, late oblongo-elliptica, basi rotundata, apice abruptissime et anguste triangulari-acuminata, 8–20 cm. longa, 5–8 cm. lata, integra, infra praesertim nervis longe setoso-pilosa, nervis lateralibus circiter 8–10. *Paniculae* e trunco ortae, dense hirsutae, usque ad 20 cm. longae. *Alabastra* subglobosa. *Sepala* 4, valvata, hirsuta. *Petala* 4, intra saccata. *Stamina* 7, filamentis et antheris pubescentibus.

Gold Coast : Amaneakrom, Sept., *Chipp* 372.

Aphania silvatica *A. Chev.* Explor. Bot. Afr. Occid. Franç, 152, nomen ; affinis *A. senegalensi* Radlk., sed foliolis elongato-oblongis late acuminatis longe petiolatis differt.

Arbor parva. *Foliola* 2-juga, elongato-oblonga, apice late acuminata, basi anguste cuneata, 12–20 cm. longa, 3–8 cm. lata, glabra, utrinque venuloso-reticulata, nervis lateralibus multe ramosis. *Paniculae* e basi ramosae, usque ad 18 cm. longae, breviter pubescentes. *Flores* conferti ; pedicelli medio articulati, pubescentes. *Sepala* orbicularia, ciliata. *Stamina* basi villosa. *Ovarium* didymum, glabrum, carpella una abortiva. *Fructus* late ellipsoideus, 1·3 cm. longus, glaber.

Ivory Coast : Cavally Basin, *Chevalier* 20064 (type). Gold Coast : Tano River, Sept., *Chipp* 345.

Chytranthus atroviolaceus *Bak. f. ex Hutch. et J. M. Dalz.*, sp. nov. ; racemis elongatis purpurascentibus, foliolis magnis distincta.

Arbor usque ad 20 m. alta. *Foliola* elongato-oblonga vel oblongo-elliptica, abrupte caudato-acuminata, basi breviter cuneata, 30–35 cm. longa, 9–15 cm. lata, nervis lateralibus prominentibus utrinsecus circiter 25, inter nervos reticulata, supra nitida. *Racemi* e trunco glomerati, elongati, purpurascentes. *Calyx* campanulatus, 1 cm. longus, fere ad medium lobatus, extra tomentellus, atroviolaceus. *Petala* obovato-spathulata, calyce paulo longiora, puberula. *Ovarium* et stylus purpureis setosus.

Sierra Leone : near Heirakohun, *Smythe* 126. Nigeria : Southern Provinces ; Oban, *Talbot* 1583, 1596 (type).

Chytranthus ellipticus *Hutch. et J. M. Dalz.*, sp. nov. ; affinis *C. setoso* Radlk., sed foliolis basi rotundatis vel subcordatus ellipticis differt.

Ramuli tomentelli. *Foliola* oblongo-elliptica, acute acuminata, basi rotundata vel subcordata, 20–25 cm. longa, 8–10 cm. lata, costa et nervis lateralibus utrinsecus circiter 14 dense et longe

pilosis, subbullata ; petioluli circiter 5 mm. longi, hirsuti. *Racemi* conferti, juniores densissime floriferi, demum usque ad 15 cm. longi, ubique molliter tomentosi. *Bracteae* breviter triangulari-subulatae, tomentosae, 2 mm. longae. *Alabastra* pyramidata, circiter 5 mm. longa.

Nigeria : Southern Provinces ; Oban, *Talbot* 1399 ; Eket, *Talbot* 3129 (type).

Pancovia sessiliflora *Hutch. et J. M. Dalz.*, sp. nov. ; affinis *P. pedicellari* Radlk. et Gilg, sed floribus glomeratis sessilibus, foliolis 1–2-jugis differt.

Frutex scandens ; ramuli glabri. *Foliola* 1–2-juga, opposita, obovata-elliptica, obtuse acuminata, basi cuneata, 8–16 cm. longa, 4–7 cm. lata, utrinque crebre reticulata, glabra, nervis lateralibus utrinsecus circiter 10 ; petioluli 5–6 mm. longi. *Flores* glomerati, sessiles. *Calyx* cupularis, 4 mm. longus, lobis ovatis obtusis, extra tomentellis. *Petala* obovata, margine crispata.

Nigeria : Southern Provinces ; Ikoyi Plains, Lagos, Feb., *Dalziel* 1178.

Melianthaceae.

Bersama subalata *Hutch. et J. M. Dalz.*, sp. nov. ; affinis *B. leiostegiae* Stapf, sed stipulis appresse villosis lanceolato-triangularibus minoribus differt.

Ramuli crassi fere glabri. *Folia* usque ad 35 cm. longa ; rhachis superne anguste alatus ; foliola circiter 7-juga, oblongo-elliptica, obtuse acuminata, 6–12 cm. longa, 3–4·5 cm. lata, integra, nervis lateralibus circiter 8 infra puberulis exceptis glabra ; stipulae lanceolato-triangulares, circiter 1·3 cm. longae, appresse villosae. *Inflorescentia* non visa ; pedicelli 5–7 mm. longi, molliter tomentelli. *Sepala* triangulari-ovata, 5 mm. longa, tomentella. *Petala* mox reflexa, oblongo-oblanceolata, 1 cm. longa, utrinque tomentella.

Nigeria : Southern Provinces, Oban, *Talbot* 147.

Anacardiaceae.

Sorindeia deliciosa *A. Chev.* Explor. Bot. Afr. Occid. Franç. 160, nomen ; species non satis nota foliolis oblongo-ellipticis longe et subcaudato-acuminata distincta.

Ramuli crassi, glabri. *Folia* usque ad 35 cm. longa ; foliola circiter 8-juga, subopposita, oblongo-elliptica, longe et subcaudato-acuminata, basi inaequilatere cuneata, circiter 15 cm. longa et 6 cm. lata, glabra, nervis lateralibus utrinsecus 8–9 infra prominentibus conjunctis ; petioluli 1 cm. longi, transverse verrucosi. *Flores* non visi. *Fructus* oblongo-ellipsoideus, 3 cm. longus, sicco verruculosus, exocarpeo lignoso 2 mm. lato, endocarpeo membranaceo stramineo.

Ivory Coast : various localities, *Chevalier* 16170, 16819, 16982 bis, 17010, 17011, 22314, 22683 (type). Nigeria : Southern Provinces ; without locality, *Thompson* 9.

Trichoscypha Smythei *Hutch. et J. M. Dalz.*, sp. nov. ; affinis *T. ferrugineae* Engl., sed inflorescentia elongata dense pilosa differt.

Foliola 6-juga, oblonga, sensim acuminata, basi breviter cuneata, circiter 20 cm. longa et 6 cm. lata, supra costa densissime villosa, infra leviter pubescentia, nervis lateralibus numerosis ; petioluli 1 cm. longi. *Inflorescentia* elongata, pauciramosa, dense pilosa. *Flores* conferti, glabri ; pedicelli usque ad 2 mm. longi. *Petala* ovata, 2 mm. longa.

Sierra Leone : Picket Hill, Dec., *Unwin & Smythe* 33.

Rhus incana var. **dahomensis** *Hutch. et J. M. Dalz.*, var nov. ; a typo foliolis apice late rotundatis vel emarginatis superne crenulatis infra tenuiter pubescentibus differt.

Dahomey : between Kouandé and Konkobiri, *Chevalier* 24263.

ARALIACEAE.

Polyscias fulva *Hutch. et J. M. Dalz.*, comb. nov. ; *Panax fulvum* Hiern in Oliv. Fl. Trop. Afr. 3 : 28.

Extends from the Island of Fernando Po through the French Cameroons to Uganda.

Cussonia longissima *Hutch. et J. M. Dalz.*, sp. nov. ; foliolis oblongo-obovatis abruptissime acuminatis subintegris vel crenulatis graciliter venulosis distincta.

Arbor parva ; ramuli crassi. *Foliola* oblongo-obovata, abrupte acuminata, basi longe cuneata, circiter 15 cm. longa et 6 cm. lata, subintegra vel crenulata, infra crebre venulosa, nervis lateralibus utrinsecus 10–12 gracilibus. *Spicae* floriferae circiter 15 cm. longae, demum elongatae ; bracteae parvae, reflexae. *Fructus* junior obovoideus, 5 mm. longus.

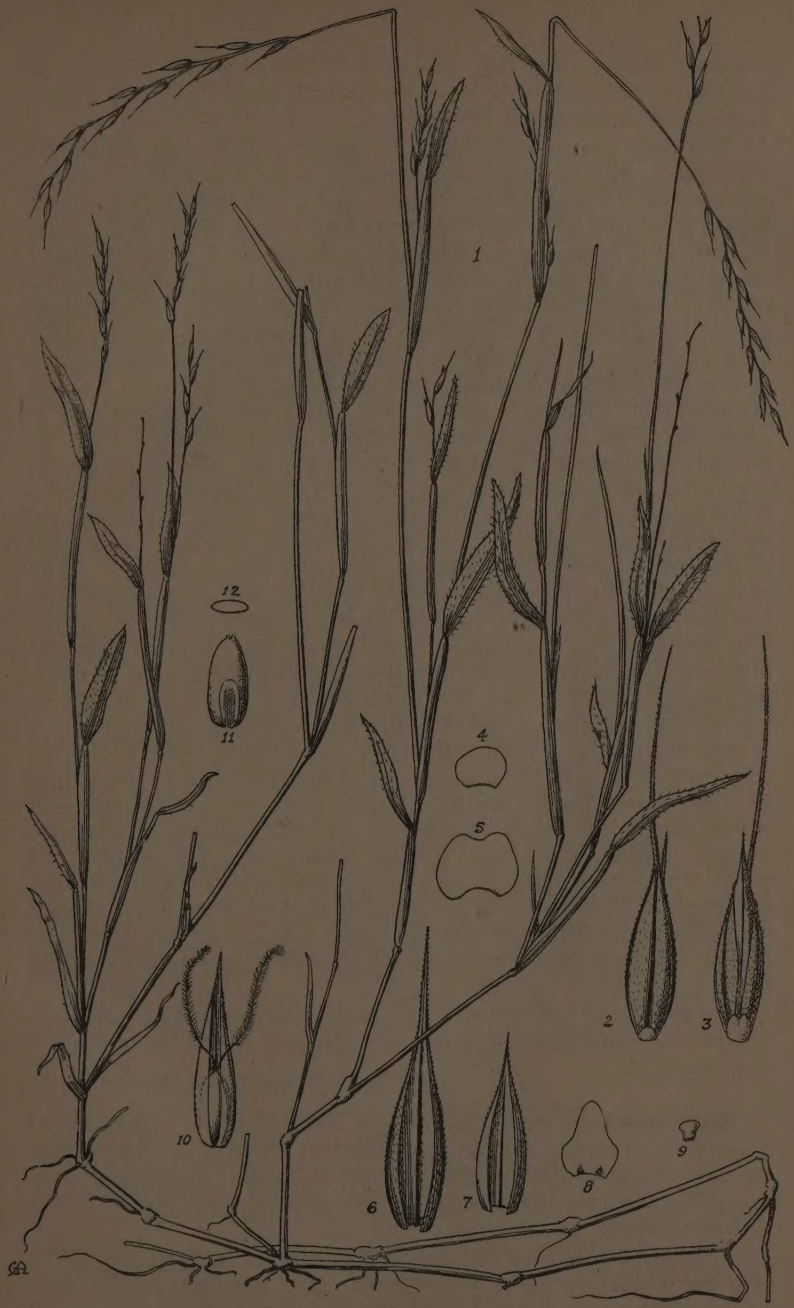
Gold Coast : Salaga, June, *Saunders in Herb. Chipp.* 805 (type) ; without locality, *Thompson* 61.

V.—NOTES ON AFRICAN GRASSES, VIII. SNOWDENIA, A NEW GENUS FROM UGANDA.

C. E. HUBBARD.

Whilst on tour in the Mount Elgon area of the Bugishu district of Uganda, Mr. J. D. Snowden made an extensive collection of the grasses growing on the upper slopes of the Butandiga ridge. Amongst several of exceptional interest is the subject of the present paper, which is described below as a new genus. It has been named *Snowdenia* after its discoverer, who, during 17 years service in the Agricultural Department of Uganda, has studied the flora with enthusiasm and discovered many additions and novelties.

The new grass was found growing in short grass turf, on land much frequented by cattle, sheep and goats, near the edge of bushes, in association with such grasses as *Digitaria abyssinica* Stapf, *D.*



Snowdenia microcarpha C. E. Hubbard. 1, Plant, natural size. 2 and 3, Spikelet showing front and back views respectively (×7). 4, Lower glume (×13). 5, Upper glume (×13). 6, Lemma of lower floret (×7). 7, Lemma of upper floret (×7). 8, Palea (×7). 9, Lodicule (×7). 10, Upper floret (×7). 11, Caryopsis (×7). 12, Section of caryopsis (×7).

scalarum Chiov., *Panicum calvum* Stapf, *Oplismenus hirtellus* P. Beauv., *Arthraxon Quartinianus* Nash, *Acritochaete Volkensii* Pilger, *Pennisetum clandestinum* Hochst., etc.

The only genus with which it shows any marked affinity is *Acritochaete* Pilger, which was originally described from specimens collected on Kilimanjaro by Volkens, but is now known to occur on Mount Aberdare in Kenya Colony and on Mount Elgon in Uganda. *Snowdenia* is a short grass with weak, decumbent, much-branched culms, rooting at the lower nodes and with all the branches bearing solitary, slender, spiciform racemes. It differs from *Acritochaete*, first in regard to the arrangement of its inflorescence, and secondly in the structure of its spikelets. On first examination the spikelets appear to be spirally arranged, but this is due to the twisting of the raceme-axis; they are really subsecund and distichous. The peduncles of the racemes may be solitary, but more often there are two or three together from the uppermost node, whereas in *Acritochaete* the peduncles are always solitary and bear from one to three racemes. The new genus has the spikelets rather more dorsally compressed, quite glabrous and shortly awned, but they are similar in outline to those of *Acritochaete*, although slightly smaller. The lower glumes are very similar in both genera; the upper glumes are, however, very different. In *Snowdenia* the upper glume is reduced to a very small nerveless hyaline scale resembling the lower, whereas in *Acritochaete* it is lanceolate in outline, almost as long as the spikelet, prominently three-nerved, firm in texture and produced at the tip into a long, very fine, twisted awn. The lemma of the lower floret is more flattened on the back than in Pilger's genus, whilst in the dry state only three of the five nerves can be distinctly seen. The lemma of the upper floret bears a close resemblance to that of *Acritochaete*; it is thinly chartaceous and has thin membranaceous margins which just touch, folding loosely over the palea. The palea of the upper floret is very much reduced and only about half the length of the floret. It has broad flaps at the base, is very thinly membranous or almost hyaline in texture, keelless and nerveless and loosely envelops the caryopsis which is more or less exposed at the tip.

Snowdenia is also allied to *Chloridion* Stapf, but the digitate inflorescence and very much reduced spikelets of the latter at once distinguish it.

Snowdenia *C. E. Hubbard*, gen. nov.; affinis *Acritochaetae* Pilger, sed racemis solitariis, pedunculis racemorum plerumque binatis vel trinatis, spiculis breviter aristatis, gluma superiore minuta hyalina enervia, palea anthoecii superi enervia hyalina multo breviore differt.

Spiculae lanceolatae vel lineari-lanceolatae, tenuiter acutae et breviter aristatae, dorso compressae, cum pedicello articulatae, laxe imbricatae, alternatae, biseriatae, subsecundae in rhachi

spiciformis racemi. *Anthoecia* bina; inferum sterile, lemmati reductum; superum ♀. *Glumae* minutae, hyalinae, albidae, enerviae, exaristatae; inferior abaxialis, leviter superiore brevior. *Anthoecium inferum*: lemma spiculae aequilongum, ambitu lanceolatum, dorso planum, apice aristatum, tenuiter chartaceum, 5-nervium, nervis scabridulis prominentibus. *Anthoecium superum*: lemma infero simile sed leviter brevius, 3–5-nervium, tenuiter chartaceum, marginibus membranaceis; palea squamae brevi hyalinae enerviae reducta. *Lodiculae* binae, minutae, cuneatae, truncatae, glabrae. *Stamina* 3. *Ovarium* oblongo-ovoideum; styli terminales, distincti; stigmata lateraliter exserta. *Caryopsis* oblonga, dorso compressa, inter lemma paleamque laxe inclusa, hilo basali, scutello dimidium caryopsidis aequante.—*Gramen* annuum, culmis debilibus, multiramosis; foliorum laminae lanceolatae, oblongo-lanceolatae, vel lineari-lanceolatae; ligulae membranaceae, ciliolatae, truncatae; racemi graciles, solitarii, pedunculi racemorum raro solitarii, plerumque binati vel trinati.

Snowdenia microcarpha *C. E. Hubbard. Culmi* longe decumbentes et geniculato-ascendentes, e nodis radicantes, multiramosi, omnibus ramis floriferis, 15–30 cm. alti, graciles vel gracillimi, teretes, virides vel purpurei, multinodi, laeves vel leviter asperuli, nodis pubescentibus pilis albis retrorsis adpressis, ceterum glabri. *Foliorum vaginae* moderate laxae, tenues, tenuiter striatae, glabrae laevesque vel superne molliter pubescentes, marginibus plerumque ciliatis; ligulae 1 mm. longae; laminae basi angustatae, breviter acutae vel raro obtusae, 1·2–3 cm. longae, 2·5–5 mm. latae, planae, tenues, glabrae laevesque vel sparse pubescentes tuberculataeque. *Racemi* graciles, flexuosi vel stricti, 2·5–4 cm. longi; rhachis gracillima, ad 0·25 mm. lata, glabra, valde flexuosa, laevis vel minute asperula; pedicelli ad 0·5 mm. longi, apice leviter incrassati, minute puberuli. *Spiculae* 3·5–4 mm. longae, glabrae, virides. *Gluma* inferior lata, 0·4 mm. longa; superior late ovata, biloba vel truncata, 0·7 mm. longa. *Lemma anthoecii inferi* asperulum, arista tenuissima 3–5 mm. longa. *Lemma anthoecii superi* 3 mm. longum, arista circ. 1 mm. longa; palea oblonga, obtusa, 1·8 mm. longa. *Antherae* 1 mm. longae. *Caryopsis* 1·5–2 mm. longa, pallide fusca.

UGANDA. Mt. Elgon: Butandiga, 2100 m., Dec. 1927, *Snowden* 1228.

VI.—MISCELLANEOUS NOTES.

The following appointments have been made by the Secretary of State for the Colonies:—

Mr. G. F. CLAY, M.C., B.Sc. (Geneticist, Amani Institute), to be Senior Agricultural Officer, Uganda (*K.B.* 1927, p. 315); Mr. D. THORNTON, D.Sc., Mr. F. E. BUCKLEY, A.R.C.S., Mr. K. D. R. DAVIS, B.A., Mr. C. B. TAYLOR, Superintendents, Agricultural Department, Nigeria; Mr. T. H. NICOL, B.Sc., Agricultural Instructor, Sultan Idris College, Federated Malay States; Mr. J. L. GREIG, B.Sc.,

Assistant Agriculturist, Federated Malay States; Mr. E. J. H. Corner, B.A., Assistant Director of Gardens, Straits Settlements; Mr. H. A. Pieris, Divisional Agricultural Officer, Ceylon; Mr. R. H. Cowan, Produce Inspector, Nigeria; Mr. R. M. Maynard, B.Sc., District Agricultural Officer, Tanganyika Territory; Mr. H. B. Waters, B.A. (Deputy Assistant Director of Agriculture, Nigeria), Deputy Director of Agriculture, Gold Coast (*K.B.* 1921, p. 171).

Mr. F. A. Stockdale, C.B.E., Director of Agriculture, Ceylon, has been appointed Assistant Agricultural Adviser to the Secretary of State for the Colonies (*K.B.* 1916, p. 277).

The following appointments at the Royal Botanic Gardens, Kew, have been made by the Minister of Agriculture and Fisheries :—

Miss M. L. Green, B.A., F.L.S., to be an Assistant in the Herbarium, on the re-grading of her post as Sub-Assistant for the Index Kewensis.

Mr. E. M. Marsden-Jones, F.L.S., to be an Honorary Associate for Transplant and Breeding Experiments.

Sir William Turner Thiselton-Dyer, K.C.M.G., C.I.E. We record with deep regret the death, on Christmas Eve, 1928, of Sir William Thiselton-Dyer, the third Director of the Royal Botanic Gardens, in his 86th year.

Sir William was appointed Assistant Director to Sir Joseph Hooker in 1875, and ten years later he succeeded to the Directorship on the resignation of Sir Joseph. For the next twenty years his remarkable administrative powers were devoted to the development of the Gardens as the centre of Botanical Enterprise for the Empire, and also as a place of beauty and scientific interest and education for the public generally.

It is hoped to publish a fuller appreciation of Sir William's work in a future number of the Bulletin.

The Ven. William Percival Johnson, D.D., Archdeacon of Nyasaland, died in that country in October last. Details of his 50 years missionary work in that region have been published elsewhere, but in the midst of his many occupations he found time to collect and dry specimens of plants, which were sent to Kew at various times between 1884 and 1919. These were not only from Nyasaland, but also from Portuguese East Africa, and are enumerated in the Flora of Tropical Africa; many of them belonged to species previously undescribed.

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